

RESEARCH DEPARTMENT

**BAND III TRANSMITTING AERIAL FOR THE
SANDALE TELEVISION STATION**

Technological Report No. E-114/16

(1965/53)

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for Head of Research Department

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INTRODUCTION

A second v.h.f. television transmitter has been installed at Sandale to radiate the Scottish Region BBC-1 programme. It extends the coverage of this programme to South-West Scotland. The transmitter came into operation on 27th September 1965.

SUMMARY OF INSTALLATION

Site: The site is on Sandale Fell, 13 miles (21 km) south-west of Carlisle; grid reference NY266398; height 1,192 ft (364 m) a.m.s.l.

Support Structure: The existing mast was used to support the new aerial. The mast is 500 ft (152 m) high, being of square section with a side dimension of 4 ft (1.22 m). Its orientation is such that one stay is on a bearing of 55° ETN.

General Arrangement: See Fig. 1.

Channel: Channel 6, with horizontal polarization is used. Vision and sound carriers are offset + 16.875 kc/s.

Aerial: The aerial¹ has six tiers spaced 1.095λ apart. Each tier consists of a single longitudinal slot in the surface of a 6 ft 9 in. (2.06 m) diameter cylinder. (The orientation of the slots relative to the cylinder axis is 335° ETN.) The mean height of the aerial is 468 ft (142 m) a.g.l. There are independent main feeders to each 3-tier half aerial.

Power: Two 5 kW transmitters are used.

Templet and horizontal radiation pattern (h.r.p.): See Fig. 2 and Note.

Gain:	Mean intrinsic gain	7.7 dB
	<u>Deduct:</u> losses due to distribution feeder and possible mis- alignment	<u>0.3 dB</u>
	Mean net gain	7.4 dB
	<u>Deduct:</u> loss in main feeder, type, Hackethal 1.5/8 in. (41 mm) dia.	1.5 dB
	network loss	<u>0.5 dB</u> <u>2.0 dB</u>
	Mean effective gain	<u><u>5.4 dB</u></u>
<u>Programme Link:</u>	The programme is obtained by means of a microwave link from an intermediate site at Lowther Hill, about 7 miles (11 km) east of Sanquhar, where the Band I transmission from Kirk O'Shotts is received.	
<u>Note:</u>	The form of the aerial is such that the h.r.p. can be calculated accurately.	

REFERENCE

1. Detailed information on the construction and dimensions of the aerial is given on the following drawing prepared by BBC Planning and Installation Department.

P.I.D. 8823.21H General Assembly.

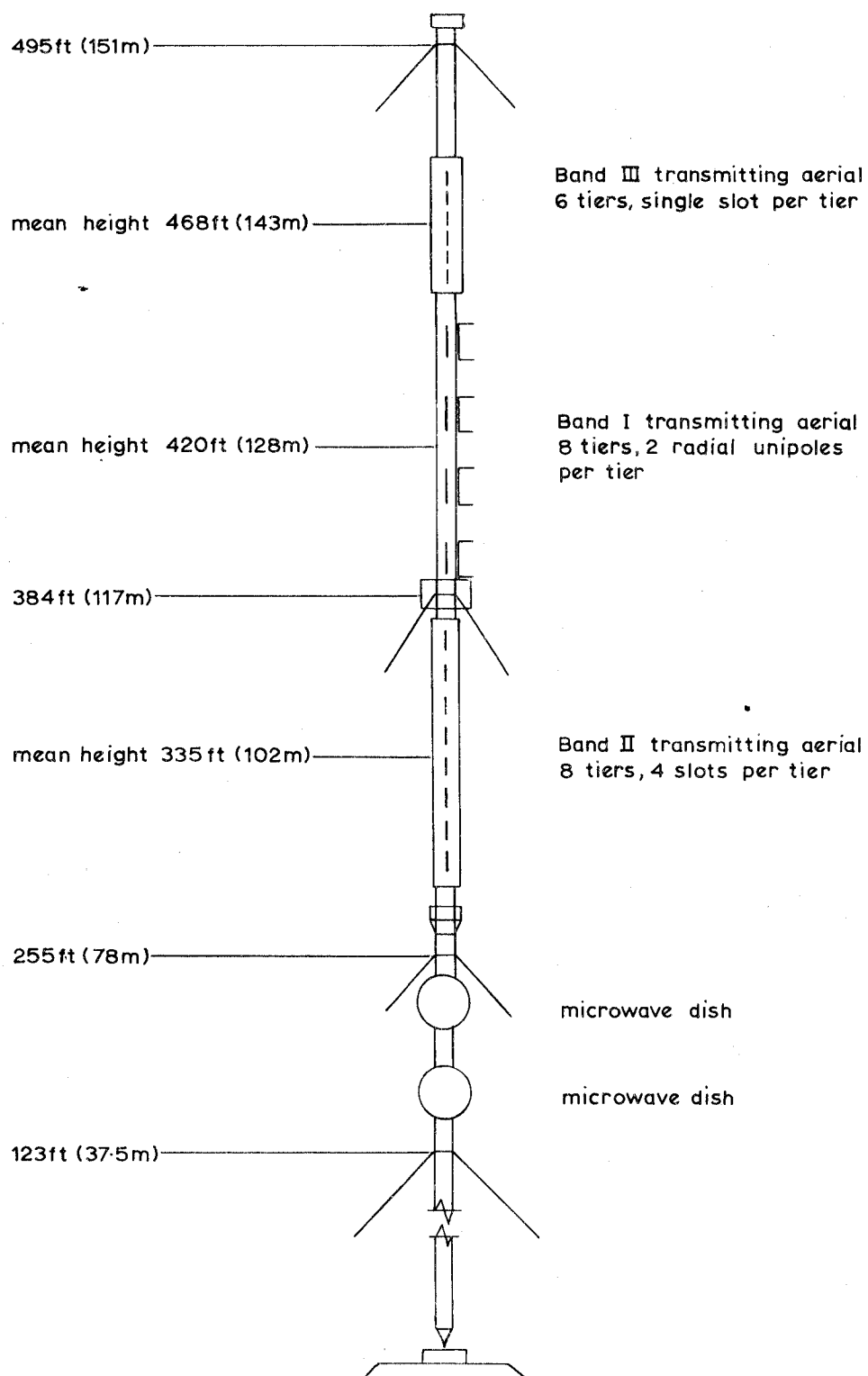


Fig.1. General arrangement of transmitting aerials on mast

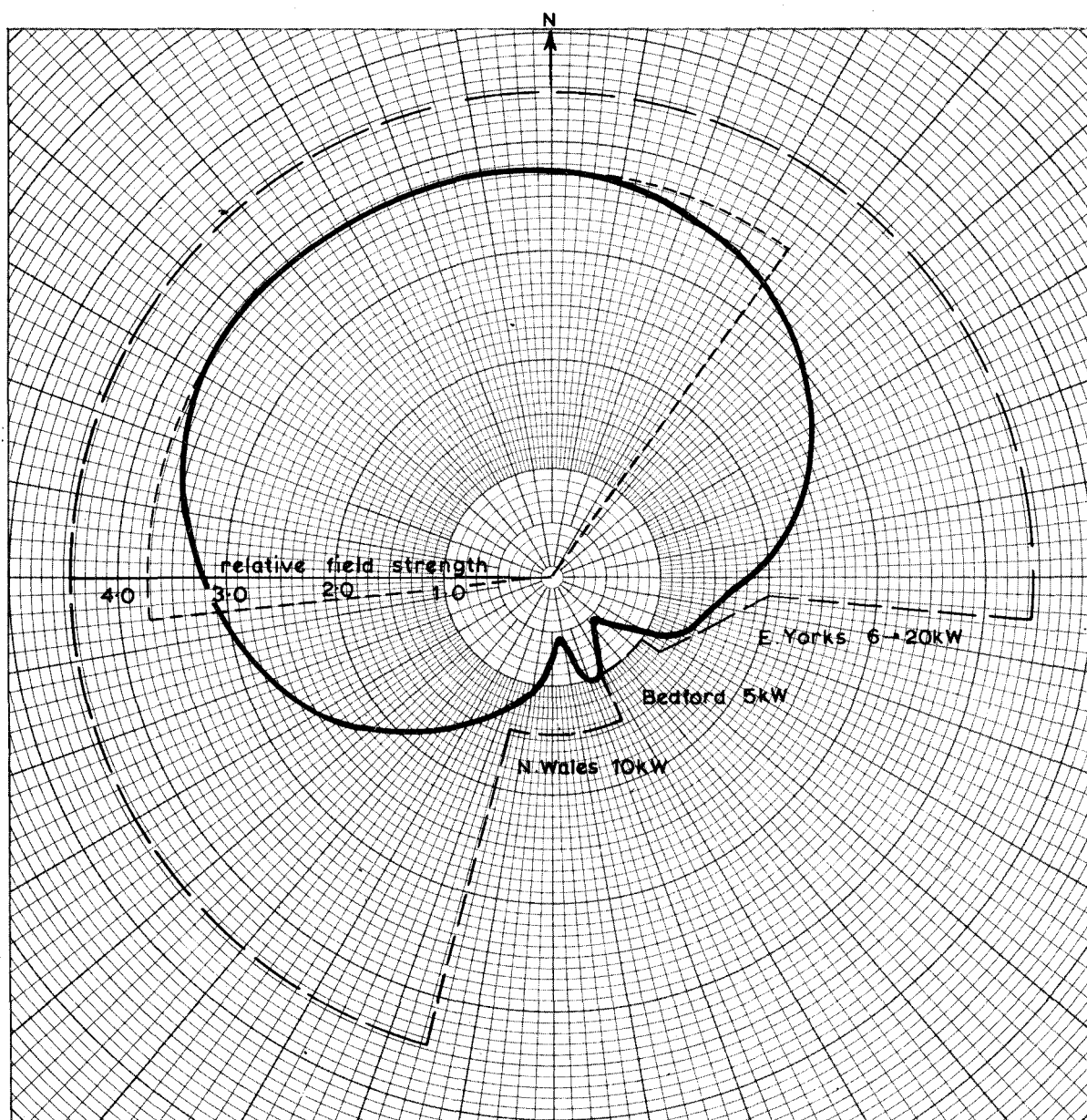


Fig.2. Templet and horizontal radiation pattern

HORIZONTAL POLARIZATION

Channel 6 (Vision carrier 179.75 Mc/s, Sound carrier 176.25 Mc/s)

Mean effective gain: 5.4 dB

Transmitter power: 10kW

Mean E.R.P.: 35kW

————— Maximum permissible E.R.P.

----- Minimum desirable E.R.P.

Unit field strength corresponds to an E.R.P. of 5kW